

CLAIMS

1. Apparatus for controlling an interactive virtual environment, the apparatus comprising means for
5 defining a virtual environment populated by objects, the objects comprising at least avatars and props, wherein:

objects within the virtual environment may be dynamically attached to and detached from other objects
10 under user control; and

a prop has associated with it an animation for use when an avatar interacts with the prop, and when the prop is attached to another object the animation remains associated with the prop.

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2. Apparatus according to claim 1 wherein, when an object is attached to another object, it inherits the movement of the object to which it is attached.

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3. Apparatus according to claim 1 or 2 further comprising means for storing an animation sequence for subsequent replay or editing.

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4. Apparatus according to claim 1 or 2, being an apparatus for playing a computer game.

5. Apparatus for controlling an interactive virtual environment, the apparatus comprising:

means for defining a virtual environment populated
30 by objects;

means for allowing a user to control the virtual environment to create an animation sequence; and

means for storing an animation sequence for subsequent replay or editing;

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wherein objects within the virtual environment may be dynamically attached to and detached from other

objects, and when an object is attached to another object it inherits the movement of the object to which it is attached.

5 6. Apparatus according to claim 5 wherein the objects comprise at least avatars and props.

 7. Apparatus according to claim 6, wherein a prop has associated with it an animation for use when
10 an avatar interacts with the prop.

 8. Apparatus for controlling an interactive virtual environment, the apparatus comprising:
 means for defining a virtual environment populated
15 by objects, the objects comprising at least avatars and props;

 means for allowing a user to control the virtual environment to create an animation sequence; and
 means for storing an animation sequence for
20 subsequent replay or editing;
 wherein a prop has associated with it an animation for use when an avatar interacts with the prop.

 9. Apparatus according to any of claims 1 to 4
25 or 7 or 8, wherein the prop has associated with it an animation defining the movement of the prop and an animation defining the movement of the avatar when the avatar interacts with the prop.

30 10. Apparatus according to any of claims 1 to 4 or 7 to 9 wherein, when the avatar interacts with the prop, the avatar queries the prop for the avatar animation associated with the prop.

35 11. Apparatus according to any of claims 7 to 10 wherein, when the prop is attached to another object,

the associated animation or animations remain associated with the prop.

12. Apparatus according to any of claims 1 to 4
5 or 7 to 11 wherein the animation or animations are defined as part of a state machine which is associated with the prop.

13. Apparatus according to claim 12 wherein the
10 state machine comprises a state transition which defines an initial state, a final state, and at least one of a prop animation which takes the prop from the initial state to the final state, and an avatar
15 animation which takes the avatar from the initial state to the final state, and optionally back to the initial state.

14. Apparatus according to claim 13 wherein a
precondition is associated with one of the states.
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15. Apparatus according to any of claims 12 to 14 wherein the state machine has an idle state.

16. Apparatus according to any of claims 3 or 5
25 to 15 wherein an animation sequence is stored as a script comprising a list of commands.

17. Apparatus according to claim 16 wherein the
commands are the same commands as may be entered by a
30 user in order to control the virtual environment.

18. Apparatus according to claim 16 or 17 wherein
a script contains an instruction which is to be passed
to an object in the virtual environment.

19. Apparatus according to claim 18 wherein the instruction is only passed to the object once an animation which precedes it in the script has been played out.

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20. Apparatus according to any of the preceding claims, wherein an avatar comprises at least a file defining its appearance, and an animation defining its movements.

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21. Apparatus according to any of the preceding claims, wherein a plurality of avatars share a common animation.

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22. Apparatus according to claim 21 wherein the common animation is retargeted to fit the size of the avatar in question.

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23. Apparatus according to any of the preceding claims, wherein a prop includes a file which specifies a way in which the prop may contain other props.

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24. A method of controlling an interactive virtual environment, the method comprising defining a virtual environment populated by objects, the objects comprising at least avatars and props, wherein:

objects within the virtual environment may be dynamically attached to and detached from other objects under user control; and

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a prop has associated with it an animation for use when the prop interacts with an avatar, and when the prop is attached to another object the associated animation remains associated with the prop.

25. A method of controlling an interactive virtual environment, the method comprising the steps of:

5 defining a virtual environment populated by objects, wherein objects may be dynamically attached to and detached from other objects;

allowing a user to control the virtual environment to create an animation sequence; and

10 storing an animation sequence for subsequent replay or editing;

wherein when an object is attached to another object it inherits the movement of the object to which it is attached.

15 26. A method of controlling an interactive virtual environment, the method comprising:

defining a virtual environment populated by objects, the objects comprising at least avatars and props;

20 allowing a user to control the virtual environment to create an animation sequence;

storing an animation sequence for subsequent replay or editing; and

25 associating with a prop an animation for use when an avatar interacts with the prop.

27. A computer program which, when run on a computer, causes the computer to carry out the method of any of claims 24 to 26, or to become the apparatus
30 according to any of claims 1 to 23.

28. A computer readable storage medium having stored thereon a computer program which, when run on a computer, causes the computer to carry out the method
35 of any of claims 24 to 26, or to become the apparatus according to any of claims 1 to 23.